



# ***BP/Deepwater Horizon Oil Spill Regional Perspective***



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***On April 20, 2010, methane gas from the BP Deepwater Horizon oil drilling unit in the Gulf of Mexico exploded, killing eleven workers.***



***The subsequent sinking of the drilling unit resulted in a massive oil leak into the Gulf of Mexico that lasted nearly three months.***



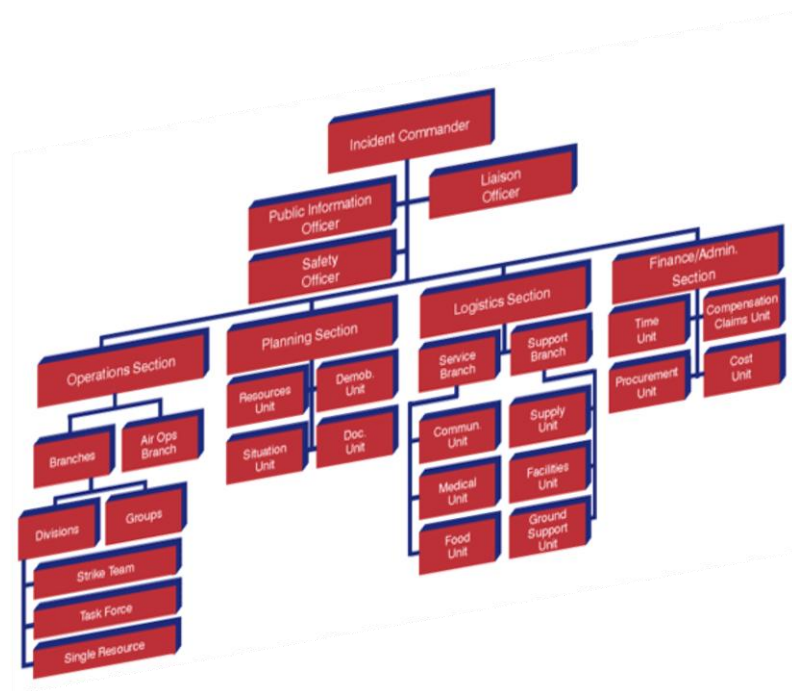


## Planning and Preparation

- ***The United States Coast Guard was the lead agency for the Deepwater Horizon Oil Spill response***
- ***Regions 4 and 6, using their Emergency Response Teams (ERT) organized and implemented the Incident Command Structure on scene. Operations pertaining to the rig and capping the leak were based in Venice, LA and environmental impact and cleanup activities were based in Mobile, AL***
- ***The Regional Incident Command Team (RICT) was activated.***



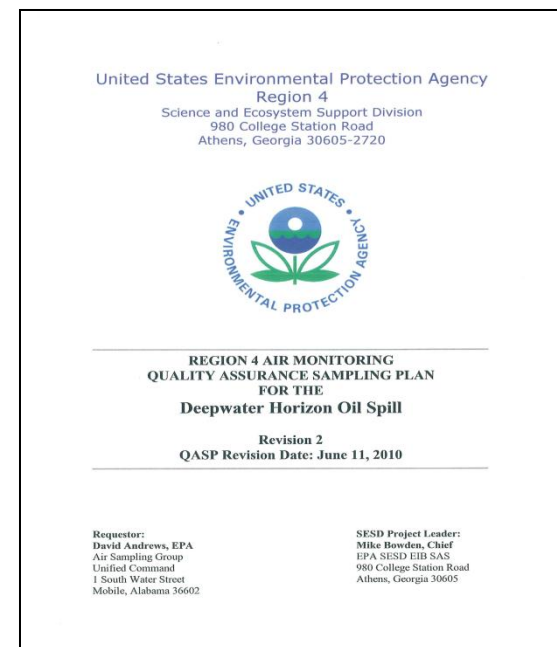
**United States Coast Guard**  
U.S. Department of Homeland Security





## *Planning and Preparation*

- ***The Regional Emergency Operations Command (REOC) was implemented in the Atlanta regional office representing all divisions of EPA Region 4.***
- ***OAQPS was involved to assist by providing resources, coordination and management of data, and expertise.***
- ***A combined air monitoring strategy and QAPP were developed by Regions 4 and 6. Monitoring plan goals and monitoring needs were communicated to FDEP, ADEM, MDEQ and LDEQ contacts.***
- ***Monitoring sites were tentatively identified.***







## ***Planning and Preparation***

- ***Sampling equipment was cleaned, calibrated and prepared for deployment.***
- ***The SESD VOC laboratory was prepared to receive samples.***
- ***The Office of Solid Waste and Environmental Response (OSWER) was contacted to provide Trace Atmospheric Gas Analyzer (TAGA) buses to help assess specific target compounds.***





# ***Air Monitoring Response Activities***

***Thousands of other environmental samples were collected, but we'll focus on the air monitoring today...***

## ***Monitoring Objective***

***The objective of the air monitoring and sampling will be to confirm the presence of airborne particulates (2.5 microns and smaller), VOCs and SVOCs in air resulting from the off shore in-situ burn, and from possible air quality impacts due to the oil spill coming onshore. The EPA will also be deploying samplers to assist in assessing whether oil dispersants being used on the oil slick are being transported through the atmosphere to populated areas on the coast.***



## ***Monitoring Plan Details***

### ***Daily VOC and SVOC Sampling at 5 sites***

***Monitoring for VOC and SVOC would provide data for volatiles and semi-volatiles that would be present in oil.***

***VOC samples analyzed using TO-15, also analyzed using TO-14 for speciated non-methane organic compounds (SNMOCs). SVOC samples were analyzed using TO-13A.***

### ***Sampling Locations***

***Panama City, FL***

***Pensacola, FL***

***Fairhope, AL***

***Gulfport, MS***

***Waveland, MS (Collocated)***





## ***Monitoring Plan Details***

### ***Continuous PM<sub>2.5</sub> Monitoring at 8 sites***

***Since a fraction of PM<sub>2.5</sub> is an aerosol, monitoring for elevated PM<sub>2.5</sub> may provide data that could identify a potential plume generated from the oil.***

***PM<sub>2.5</sub> sampling was conducted using a mix of FEM and non-FEM methods.***

***ADEM and MDEQ added additional monitors to meet the objectives of the monitoring plan.***

## ***Monitoring Locations***

***Panama City, FL***

***Fort Walton Beach, FL***

***Pensacola, FL***

***Fairhope, AL***

***Mobile, AL***

***Pascagoula, MS***

***Gulfport, MS***

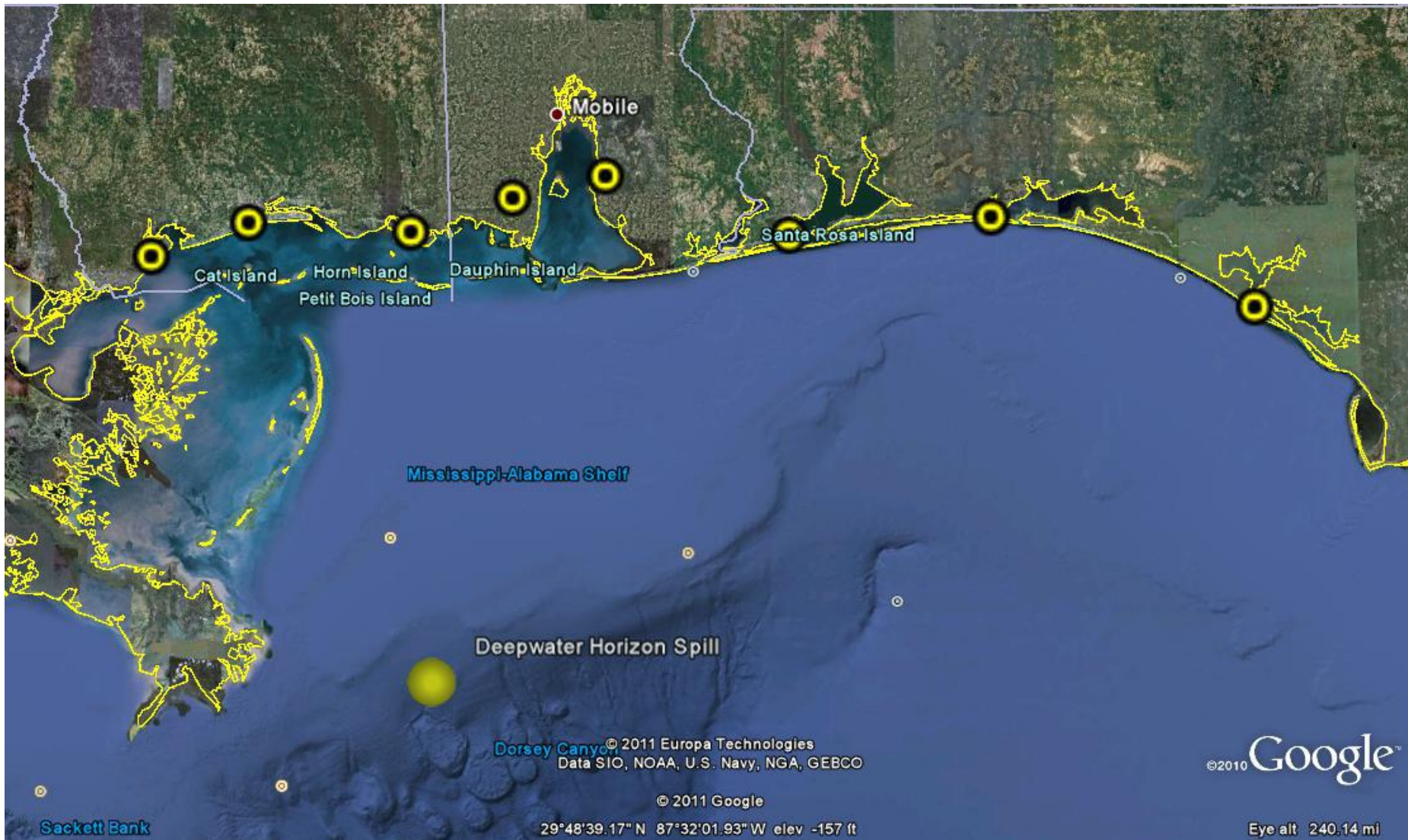
***Waveland, MS (Collocated)***







## *Monitoring Site Locations*





### ***Deepwater Horizon Air Monitoring Fast Facts***

- ***Sample collection began on March 30<sup>th</sup>, 2010***
- ***124 field sampling days***
- ***923 VOC canisters***
  - 56,248 data points by TO-15*
  - 55,068 data points by TO-14*
- ***831 SVOC (PAH) samples***
  - 18,282 data points by TO-13*
- ***Total distance driven daily by two sampling teams totaled over 600 miles.***
- ***Daily data review and daily conference calls to reconcile data issues.***
- ***Sample collection ended September 18, 2010***



### ***After All This, What Did We Find?***

***In a nutshell, concentrations of VOC, SVOC, and PM<sub>2.5</sub> were similar to what we typically see in urban air.***

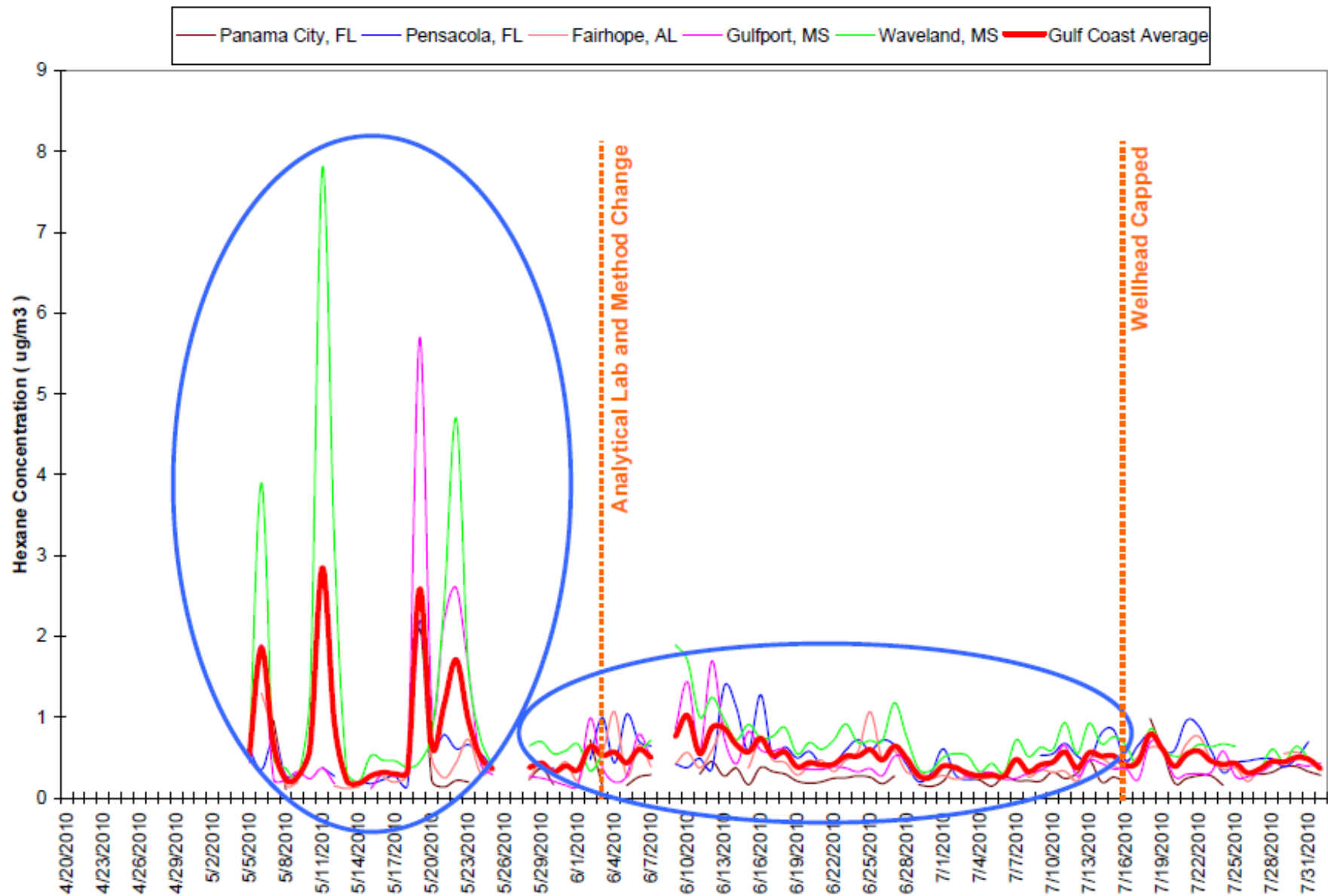
***However...***

***SESD was able to detect a signature of volatile organic compounds (VOCs) and a possible polycyclic aromatic hydrocarbons (PAHs) signature that were transported into the Mississippi area during the beginning of the oil spill.***

***This data review also indicates that after May 15th, when the subsurface application of dispersants began, these VOC alkane compounds dropped approximately an order of magnitude in concentration down to routine urban air concentrations.***

***Looking at hexane as a “tracer”...***

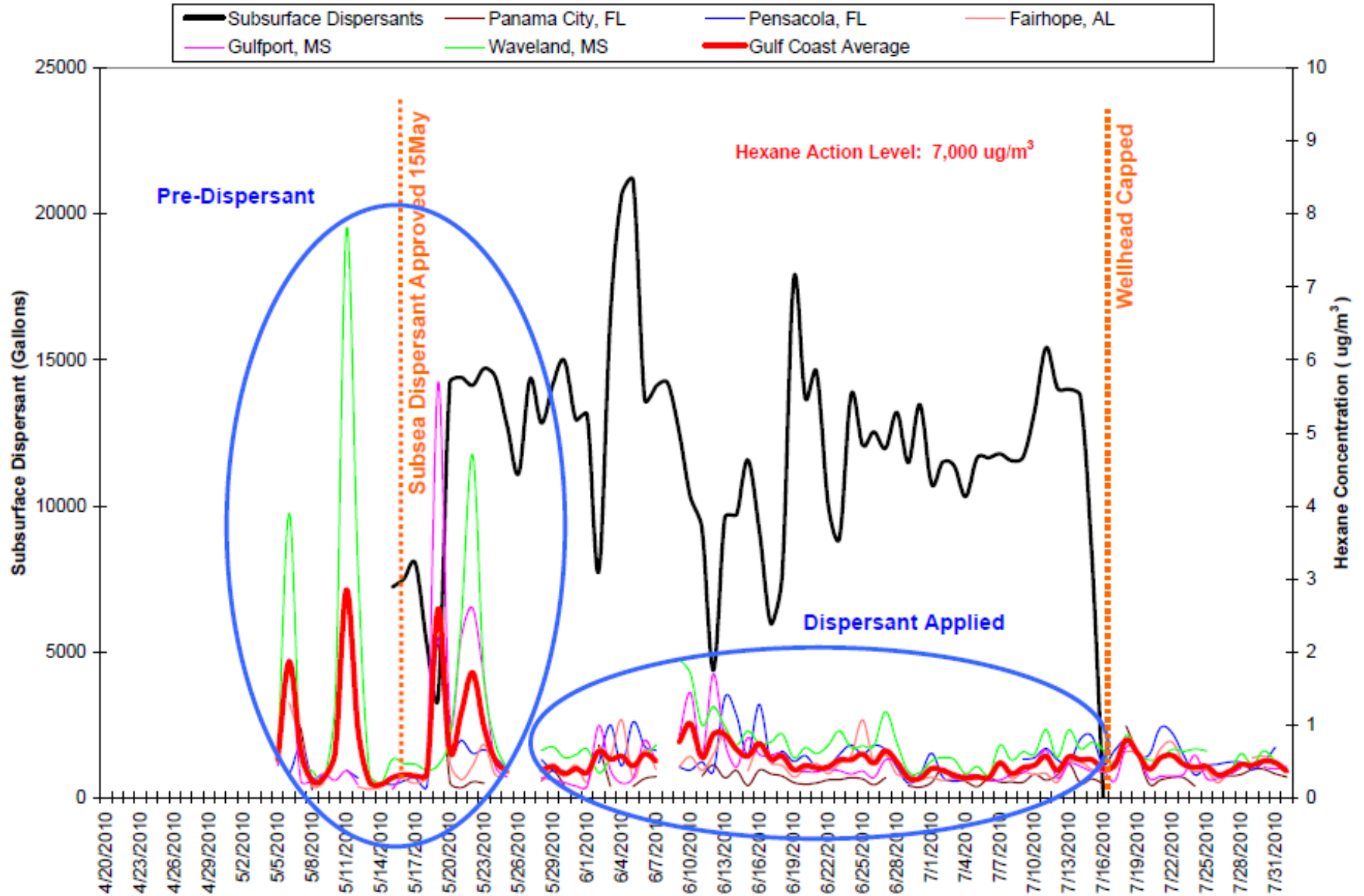
# Chart 5: Hexane Detections | Potential Method Bias



**Data analysis performed by Doug Jager, EPA Region 4, SEDS**



## Chart 2: Hexane Detections | EPA R4's Enhanced Network



*Data analysis performed by Doug Jager, EPA Region 4, SEDS*





## **Success Stories**

***Cooperation between EPA groups (regionally and nationally), state agencies, and local agencies was excellent. This cooperation was responsible for many of the successes of this project.***

***Region 4 agencies operate a very robust Gulf Coast monitoring network. The entire Region 4 Deepwater Horizon network sites were located at existing state agency sites. No new sites had to be found. Thank all of you for your networks and support you gave throughout the project.***

***The SESD laboratory was able to gear up quickly to support the VOC sampling using TO-15. The laboratory was also able to continue the support for an extended period of time. Also, prior projects have required the lab to “modify” TO-15 to target several alkanes which proved to be important in the Deepwater Horizon monitoring project.***



### ***Success Stories (cont)***

***Using the TAGA bus from OSWER, we were able to target specific compounds such as compounds in the dispersant.***

***The data flow through EPA was streamlined, quick, and effective.***

***Region 4 data recovery for the project was outstanding.***

***Sampling equipment operated were tried and true and produced quality data reliably with little down time. The laboratory methods were also methods that have historically been proven reliable.***



# ***Issues and Areas for Improvement***

## ***Laboratory Support Transition***

***Mid-way through the project, ERG was contracted to perform the laboratory analysis responsibilities. There were differences in the analytes and methods that were screened between ERG and SESD.***

- ***SESD includes a small number of alkanes in our modified TO-15 method while ERG does not under TO-15. There were differences in the analytes between the two laboratories.***
- ***ERG analyzed the VOCs by first screening the cans using TO-14, then following with TO-15. ERG showed the alkanes with the SNMOCs in the TO-14 results, not TO-15 as SESD did.***

***Therefore, some bias existed between the laboratories, especially among the SNMOCs. Unfortunately, the SNMOC alkane compounds appeared to be the signature compounds from the spill.***



## ***Issues and Areas for Improvement (cont)***

***During the project, data from instruments typically used for screening for imminent danger were used for assessing chronic risk. This practice yielded several issues.***

- ***The detection levels for these types of instruments were/are not appropriate for ambient levels of target pollutants.***
- ***Screening instruments were used for responding to odor complaints, and they could not read low enough to produce useful data.***
- ***The minimum detection limits of these screening instruments were often higher than the chronic risk levels.***

***In the future, air monitoring assets need to be identified for use for specific objectives. This will require a coordinated effort between emergency response and the ambient monitoring groups to identify appropriate usage.***



### ***Issues and Areas for Improvement (cont)***

***Data transfer between EPA and our state partners could be improved. There was a longer delay providing data to the states than anticipated. There needs to be a better way of getting validated data out to our state partners.***

- ***All data was managed and distributed through the command center.***
- ***Data entry into the program database was time consuming and required additional time.***

***The data flow from the command center needs to be streamlined, and the data should be available more quickly to stakeholders in the states answering questions from the public. Could the states be more involved in the QA procedure even if the data is not available for public release?***





***Questions?***

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